REMARKS

Claims 1-3, 5 and 8-22 are pending in this application. Reconsideration of the application based upon the following remarks is respectfully requested.

An Information Disclosure Statement with Form PTO-1449 was filed on June 23, 2006. Although a copy of the Form PTO-1449 was included with the Office Action, and the PTO-1449 was initialed by the Examiner to acknowledge the fact that the Examiner considered most of the cited information, the Form PTO-1449 was not initialed by the Examiner to acknowledge the fact that the Examiner has considered the cited U.S. Patent reference. The Examiner is requested to fully initial and return to the undersigned a copy of the subject Form PTO-1449. For the convenience of the Examiner, a copy of that form is attached.

I. Rejections Under 35 U.S.C. §103(a)

a. Claims 1-3, 5, and 8-19

Claims 1, 3, 5 and 10-15 are rejected under 35 U.S.C. §103(a) over the Applicants' Admitted Prior Art (present specification, page 1, lines 10-26; page 2, lines 1-26) in view of Iwase et al. ("Iwase"). Claims 2, 8, 9 and 16-19 are rejected under 35 U.S.C. §103(a) over the Applicants' Admitted Prior Art in view of Iwase and in further view of Hoshi et al. ("Hoshi"). Because the rejections are related, they are addressed together. Applicants respectfully traverse the rejections.

Independent claims 1 and 15 specify, *inter alia*, a fuel cell having sealing layers located to surround the periphery of the electrode assembly. Claims 1 and 15 further specify supplying a specific fluid to at least one of the conduits to facilitate separation of the electrode assembly from the pair of separators, where the specific fluid is supplied to heighten an in-passage pressure of at least one of the conduits over a level of in-passage pressure during power generation by the fuel cell or otherwise the specific fluid has a function of lowering an adhesive force of the sealing layers.

Independent claim 13 specifies, *inter alia*, a layered body of multiple fuel cells having a coolant sealing layer, which prevents leakage of a coolant from a coolant conduit formed either between adhesion faces of each pair of adjoining fuel cells or between adhesion faces of each fuel cell and each coolant conduit separator. Claim 13 also specifies a coolant removal step of supplying a fluid to the coolant conduit in the course of disassembly of the fuel cells of the layered body to remove at least part of the coolant from a space between the adhesion faces of each pair of adjoining fuel cells or from a space between the adhesion forces of each fuel cell and each coolant conduit separator.

Regarding independent claims 1 and 15, the Office Action asserts that the Applicants' Admitted Prior Art discloses "a fuel cell comprising an electrode assembly having an electrolyte interposed between a pair of electrodes; sealing layers located to surround the periphery of the electrode assembly; and a pair of separators arranged across the electrode assembly and bonded to the sealing layers, where one of the separators facing one of the electrodes has a fuel gas conduit, while the other of the separators facing the other of the electrodes has an oxidizing gas conduit." Applicants respectfully disagree.

Applicants' Admitted Prior Art actually teaches a fuel cell that "includes: an electrode assembly that has an electrolyte interposed between a pair of electrodes; sealing layers that are formed along the periphery of the electrode assembly; and a pair of separators that are arranged across the electrode assembly and bonded to the sealing layers, where one of the separators facing one of the electrodes has an oxidizing gas conduit, while the other of the separators facing the other of the electrodes has a fuel gas conduit." (Present specification, page 1, lines 10-18.) Thus, Applicants' Admitted Prior Art fails to teach or suggest sealing layers located to surround the periphery of the electrode assembly. Applicants' Admitted Prior Art also fails to teach or suggest the fuel cell disassembly method, as claimed.

Regarding independent claim 13, Applicants' Admitted Prior Art teaches, at most, a prior art fuel cell (present specification, page 1, lines 10-18; page 2, lines 6-25). However, claim 13 claims a fuel cell disassembly method not a fuel cell per se. Thus, Applicants' Admitted Prior Art fails to teach or suggest a fuel cell disassembly method and a coolant sealing layer, as claimed.

Iwase does not overcome the deficiencies of Applicants' Admitted Prior Art. Regarding independent claims 1, 15 and 20, Iwase teaches that decomposable fuel cells can be made by interposing separable layers between an electrolyte and electrodes or between electrodes and outer parts, such as separators (Iwase, col. 1, lines 35-42). However, Iwase does not teach or suggest that the separable layers are sealing layers. Thus, Iwase does not disclose sealing layers located to surround the periphery of the electrode assembly, as claimed.

Iwase further teaches that during disassembly each cell unit is soaked in a soaking tank filled with methanol until the adhesive force at the interface between the electrolyte membrane and the cathode, and the same at the interface between the electrolyte membrane and the anode, is weakened so that the electrolyte membrane is easily separable from the cathode and anode (Iwase, col. 7, lines 51-53 and 62-68). However, Iwase fails to teach or suggest that the solvent is allowed to enter the inlet and outlet flow paths as asserted by the Office Action. Additionally, Applicants' claimed invention does not immerse the electrode assembly into the specific fluid, as taught by Iwase. Iwase further fails to disclose the step of supplying a specific fluid to at least one of the conduits to facilitate separation of the electrode assembly from the pair of separators, where the specific fluid is supplied to heighten an in-passage pressure of at least one of the conduits over a level of in-passage pressure during power generation by the fuel cell or otherwise the specific fluid has a function of lowering an

adhesive force of the sealing layers. Thus, Iwase fails to teach or suggest the fuel cell disassembly method, as claimed.

Regarding independent claim 13, Iwase teaches that the polymer electrolyte fuel cells include a pair of coolant flow paths respectively arranged outside the first and second separators (Iwase, col. 8, lines 25-27). Iwase further teaches a method of recovering the electrolyte membranes from the polymer electrolyte fuel cells that includes the step of unlocking the clamping bolts and removing the coolant flow paths (Iwase, col. 8, lines 33-41). Iwase's Fig. 3 also clearly illustrates that the coolant flow paths are solid conduits that do not contain any surface interfaces that require having a coolant sealing layer to prevent leakage of the coolant (Iwase, Fig. 3, numbers 22, 23). Iwase thus fails to teach or suggest a coolant sealing layer, as claimed.

Additionally, as discussed above, Iwase fails to disclose that the solvent is allowed to enter the inlet and outlet flow paths as asserted by the Office Action. Applicants' claimed invention does not immerse the electrode assembly into the specific fluid, as taught by Iwase. Also, nowhere does Iwase teach or suggest a coolant removal step of supplying a fluid to the coolant conduit in the course of disassembly of the fuel cells of the layered body to remove at least part of the coolant from a space between the adhesion faces of each pair of adjoining fuel cells or from a space between the adhesion forces of each fuel cell and coolant conduit separator, as claimed. Thus, Iwase fails to teach or suggest a fuel cell disassembly method, as claimed.

Hoshi, cited only against dependent claims 2, 8-9, 16-19 and 21-22 fails to teach or suggest sealing layers located to surround the periphery of the electrode assembly and the fuel cell disassembly method, as claimed. Therefore, Hoshi does not overcome the deficiencies of Applicants' Admitted Prior Art and Iwase, as discussed above.

Claims 2-3, 5, 8-12, 14, and 16-19 depend from independent claims 1, 13, and 15. Because Applicants' Admitted Prior Art, Iwase, and Hoshi fail to teach or suggest, alone or in combination, the features recited in independent claims 1, 13 and 15, dependent claims 2-3, 5, 8-12, 14 and 16-19 are patentable for at least the reasons that claims 1, 13 and 15 are patentable, as well as for the additional features they recite.

Accordingly, any combination of the cited references fails to teach or suggest a fuel cell and fuel cell disassembly method, as claimed. The references thus would not have rendered obvious the claimed invention. Accordingly, reconsideration and withdrawal of the rejections are respectfully requested.

b. Claims 20-22

Claim 20 is rejected under 35 U.S.C. §103(a) over the Applicants' Admitted Prior Art in view of Iwase and in further view of Takegawa et al. ("Takegawa"). Claims 21 and 22 are rejected under 35 U.S.C. §103(a) over the Applicants' Admitted Prior Art in view of Iwase in view of Takegawa and in further view of Hoshi. Because the rejections are related, they are addressed together. Applicants respectfully traverse the rejections.

Independent claim 20 specifies, *inter alia*, a fuel cell having sealing layers located to surround the periphery of the electrode assembly. Claim 20 further specifies, *inter alia*, a fuel cell having a breaking guide that is formed in each of the separators to function as a starting point of breakage of the separator triggered by a fluid supply for disassembly of the fuel cell to supply a fluid to at least one of the conduits to heighten an in-passage pressure of at least one of the conduits over a level of in-passage pressure during power generation by the fuel cell.

Regarding independent claim 20, the Office Action asserts that the Applicants' Admitted Prior Art discloses "a fuel cell comprising an electrode assembly having an electrolyte interposed between a pair of electrodes; sealing layers located to surround the

periphery of the electrode assembly; and a pair of separators arranged across the electrode assembly and bonded to the sealing layers, where one of the separators facing one of the electrodes has a fuel gas conduit, while the other of the separators facing the other of the electrodes has an oxidizing gas conduit."

However, Applicants' Admitted Prior Art actually teaches a fuel cell that "includes: an electrode assembly that has an electrolyte interposed between a pair of electrodes; sealing layers that are formed along the periphery of the electrode assembly; and a pair of separators that are arranged across the electrode assembly and bonded to the sealing layers, where one of the separators facing one of the electrodes has an oxidizing gas conduit, while the other of the separators facing the other of the electrodes has a fuel gas conduit." (Present specification, page 1, lines 10-18.) Thus, Applicants' Admitted Prior Art fails to teach or suggest sealing layers located to surround the periphery of the electrode assembly.

At most, Applicants' Admitted Prior Art teaches that when the prior art fuel cell is disassembled, the pulling action of the linear member outward may not move the linear member sufficiently or may destroy the linear member. (Present specification, page 2, lines 18-19.) However, nowhere does Applicants' Admitted Prior Art teach or suggest a breaking guide that is formed in each of the separators to function as a starting point of breakage of the separator triggered by a fluid supply for disassembly of the fuel cell to supply a fluid to at least one of the conduits to heighten an in-passage pressure of at least one of the conduits over a level of in-passage pressure during power generation by the fuel cell, as claimed.

Iwase does not overcome the deficiencies of Applicants' Admitted Prior Art. Regarding independent claim 20, Iwase teaches that decomposable fuel cells can be made by interposing separable layers between an electrolyte and electrodes or between electrodes and outer parts, such as separators (Iwase, col. 1, lines 35-42). However, Iwase does not teach or

suggest that the separable layers are sealing layers. Thus, Iwase does not disclose sealing layers located to surround the periphery of the electrode assembly, as claimed.

Iwase further teaches that during disassembly each cell unit is soaked in a soaking tank filled with methanol until the adhesive force at the interface between the electrolyte membrane and the cathode and the same at the interface between the electrolyte membrane and the anode is weakened so that the electrolyte membrane is easily separable from the cathode and anode (Iwase, col. 7, lines 51-53 and 62-68). However, Iwase fails to disclose that the solvent is allowed to enter the inlet and outlet flow paths as asserted by the Office Action. Additionally, Applicants' claimed invention does not immerse the electrode assembly into the specific fluid, as taught by Iwase. Also, nowhere does Iwase teach or suggest a breaking guide that is formed in each of the separators to function as a starting point of breakage of the separator triggered by a fluid supply for disassembly of the fuel cell to supply a fluid to at least one of the conduits to heighten an in-passage pressure of at least one of the conduits over a level of in-passage pressure during power generation by the fuel cell. Thus, Iwase fails to teach or suggest a breaking guide, as claimed.

Takegawa, cited only against independent claim 20, does not overcome the deficiencies of Applicants' Admitted Prior Art and Iwase. Regarding independent claim 20, Takegawa, at most, teaches annular slots formed in the field, which counters the electrolyte membrane at the edge of the adhesive sealants (Takegawa, paragraph [0038]). Takegawa also teaches that these annular slots contain structures that are held inside the annular slots by mutual frictional force (Takegawa, paragraph [0038]). Takegawa further discloses that when the fuel cell is decomposed the ends of the structures are pulled in the direction of a field of separators, as shown by arrowhead B in Fig. 2 (Takegawa, paragraph [0042]). In Takegawa, the sheer stress that is created then acts on the adhesion side between the adhesive sealant and the separators to exfoliate the adhesive sealant away from the separators to facilitate

decomposition of the fuel cell (Takegawa, paragraph [0042]). However, Takegawa fails to teach or suggest a breaking guide that is formed in each of the separators to function as a starting point for breakage of the separator triggered by a fluid supply for disassembly of the fuel cell, as claimed.

Hoshi, cited only against dependent claims 21-22 fails to teach or suggest sealing layers located to surround the periphery of the electrode assembly and a breaking guide, as claimed. Therefore, Hoshi does not overcome the deficiencies of Applicants' Admitted Prior Art, Iwase and Takegawa, as discussed above.

Claims 21-22 depend from independent claim 20. Because Applicants' Admitted Prior Art, Iwase, Takegawa and Hoshi fail to teach or suggest, alone or in combination, the features recited in independent claim 20, dependent claims 21-22 are patentable for at least the reasons that claim 20 is patentable, as well as for the additional features they recite.

Accordingly, any combination of the cited references fails to teach or suggest a fuel cell, as claimed. The references thus would not have rendered obvious the claimed invention.

Accordingly, reconsideration and withdrawal of the rejections are respectfully requested.

II. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of this application are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,

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JAO:JLR/sxl

Attachment:
Form PTO-1449

Date: April 22, 2008

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